

Sun-Earth Connection Science Infrastructure

Sun

Heliosphere

Solar Wind Input

Dayside Magnetosphere

Inner Magnetosphere

Geosynchronous

Ionosphere

Nightside Magnetosphere

Magnetotail

ACE
Solar Isotopes
and Ions

Wind
Type I, II, III, IV
radio bursts

Yohkoh
High Energy
Solar Observations

TRACE
Solar Atmosphere
Magnetic Field
Photosphere

SOHO
Comprehensive,
deep core to
outer corona

IMP-8
Cosmic Rays
3D Heliosphere

Geotail
Cosmic Rays,
SEPs
3D Heliosphere
Waves, Pickup ions

ACE
Cosmic Rays
3D Heliosphere

Wind
SEPs
3D Heliosphere
Waves, Pickup ions

Ulysses
SEPs
3D Heliosphere

Voyager
Distant Heliosphere
Termination Shock

SOHO
3D Heliosphere

IMP-8
SW Plasma

Geotail
IMF/SW Plasma
Plasma Waves

ACE
IMF/SW Plasma

Wind
IMF/SW Plasma
Plasma Waves

Cluster
3D Structure
IMF/SW Plasma
Plasma Waves
Electron Foreshock

IMAGE
Solar Wind Neutrals
Interplanetary Neutrals

SOHO
IMF/SW Plasma

FAST
Cusp Dynamics
Reconnection Consequences

Geotail
Energy/Mass Transfer
Particle Circulation
Boundary Layers

Polar
Energy/Mass Transfer
Particle Circulation
Boundary Layers
Cusp Dynamics

Wind
Energy/Mass Transfer
Particle Circulation
Boundary Layers

Cluster
3D Boundary Structure
Energy/Mass Transfer
Particle Circulation
Turbulence
Cusp Dynamics

FAST
Storm Dynamics

SAMPEX
SEPs
ACRs
Radiation Belts
Particle Precipitation

Polar
Radiation Belts
Storm Dynamics
Particle Precipitation

Wind
Energy/Mass Transfer
Particle Circulation
Boundary Layers

Cluster
3D Boundary Structure
Energy/Mass Transfer
Particle Circulation
Turbulence
Cusp Dynamics

IMAGE
Plasmasphere
Storm Dynamics
Geocorona
Magnetic field mapping

FAST
Ion Outflow
Particle Precipitation
Electrodynamics

Polar
Ion Outflow
Particle Precipitation
Multiwavelength Aurora

DMSP
plasma Drifts
Particle Precipitation

IMAGE
Ion Outflow
Proton/Electron Aurora

FAST
Particle Injections
Acceleration
Plasma Waves

Geotail
Particle Injections
Instabilities
Substorms

Polar
Particle Injections
Instabilities
Thermal Ions
Substorms

Wind
Boundary Layers

Cluster
3D Structure
Particle Injections
Substorms

IMAGE
Particle Injections
Substorms

Geotail
Plasmoids
Instabilities
NENL

Wind
Deep Magnetotail
Boundary Layers

Wind
Boundary Layers

Cluster
3D Structure
Acceleration
NENL

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Senior Review

Contemporary and future Sun-Earth System Science is enabled by a synergistic suite of space missions of which FAST is an essential component.